REMARKS/ARGUMENTS

The Office Action mailed September 5, 2006, has been received and reviewed. Claims 27 and 73 through 80 are currently pending in the application. Claims 27, 73 through 78, and 80 stand rejected. Claim 79 has been objected to as being dependent upon a rejected base claim, but the indication of allowable subject matter in such claim is noted with appreciation. Claims 27, 73, 75 and 80 are amended herein. The amendments to claim 73 and 75 merely correct typographical errors and do not affect the scope of the claims. New claims 81-87 are added. No new matter is added. Reconsideration is respectfully requested.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,600,183 to Visokay et al., in View of U.S. Patent No. 5,633,200 to Hu and U.S. Patent No. 6,100,188 to Lu et al.

Claims 27, 73 through 75, 77, and 80 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Visokay et al. (U.S. Patent No. 6,600,183) in view of Hu (U.S. Patent No. 5,633,200) and Lu et al. (U.S. Patent No. 6,100,188). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Visokay discloses a method of forming an integrated circuit capacitor including depositing doped polysilicon in a hole within a dielectric layer. (Visokay, col. 10, lines 1-2). A titanium layer is deposited over the polysilicon plug 904 and a rapid thermal anneal is performed to form titanium silicide. A titanium-aluminum-nitride layer 908 is sputter deposited over the titanium silicide layer 906 to fill the hole. (Visokay, col. 10, lines 3-17).

Hu teaches a method of forming a salicide stack and is relied upon for teaching nitridization of a tungsten layer.

Lu discloses silicon stack structures and is relied upon for teaching performing a nitridation step using an N_2/HH_3 plasma ambient at a temperature between about 300-500°C and a pressure between about 0.1-5 torr.

Claim 27 of the presently claimed invention recites "[a] method of establishing electrical contact between a semiconductor substrate and a semiconductor device, comprising: providing a substrate with an overlying insulating layer; etching a hole through the insulating layer to the substrate; introducing doped polycrystalline silicon into the hole; introducing at least one titanium layer within the hole over the doped polycrystalline silicon; introducing at least one non-titanium layer over the at least one titanium layer and within the hole; providing an oxidation barrier over the non-titanium layer and within the hole; siliciding the titanium layer; nitridizing the non-titanium layer by exposing the non-titanium layer to a N_2/NH_3 ambient at a temperature of about 360°C; and forming the semiconductor device over the oxidation barrier." Support for the amendments to claim 27 and 80 may be found throughout the as-filed specification including, for example, paragraph [0057] and FIG. 10G of the substitute specification). Applicants respectfully submit that the proposed combination of references fail to teach or suggest each and every element of the presently claimed invention.

Specifically, the proposed combination of references fail to teach or suggest "providing an oxidation barrier over the non-titanium layer and within the hole" Instead, Visokay teaches a titanium silicide 906 and Ti-Al-N 908 layer within the hole wherein the Ti-Al-N 908 layer is the top layer in the hole. Hu and Lu teach stacked structures and fail to cure the deficiencies of Visokay. As the proposed combination of references fails to teach or suggest every element of the presently claimed invention, Applicants respectfully submit that claim 27 of the presently claimed invention is allowable.

Claims 73 through 75, 77, and 80 are each allowable, at least, for depending from allowable claim 27.

Claim 77 is further allowable as the proposed combination of references fail to teach or suggest siliciding the titanium layer prior to introducing at least one non-titanium layer over the at least one titanium layer and within the hole.

Obviousness Rejection Based on U.S. Patent No. 6,600,183 to Visokay et al., in View of U.S. Patent No. 5,633,200 to Hu and U.S. Patent No. 6,100,188 to Lu et al., and Further in View of U.S. Patent No. 5,699,291 to Tsunemine

Claim 76 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Visokay et al. (U.S. Patent No. 6,600,183) in view of Hu (U.S. Patent No. 5,633,200) and Lu et al. (U.S. Patent No. 6,100,188), as applied to claims 27, 73 through 75, 77, and 80 above, and further in view of Tsunemine (U.S. Patent No. 5,699,291). Applicants respectfully traverse this rejection, as hereinafter set forth.

The discussion of Visokay, Hu and Lu are incorporated herein. Tsunemine fails to cure the deficiencies of Visokay, Hu and Lu.

The Court of Appeals for the Federal Circuit has stated that "dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious." In re Fine, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of the current application, the prior art referenced as rendering dependent claim 76 obvious, cannot serve as a basis for rejection.

Obviousness Rejection Based on U.S. Patent No. 6,600,183 to Visokay et al., in View of U.S. Patent No. 5,633,200 to Hu and U.S. Patent No. 6,100,188 to Lu et al., and Further in View of U.S. Patent No. 5,410,185 to Yeh

Claim 78 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Visokay et al. (U.S. Patent No. 6,600,183) in view of Hu (U.S. Patent No. 5,633,200) and Lu et al. (U.S. Patent No. 6,100,188), as applied to claims 27, 73 through 75, 77, and 80 above, and further in view of Yeh (U.S. Patent No. 5,410,185). Applicants respectfully traverse this rejection, as hereinafter set forth.

The discussion of Visokay, Hu and Lu are incorporated herein. Yeh fails to cure the deficiencies of Visokay, Hu and Lu.

The Court of Appeals for the Federal Circuit has stated that "dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious." In re Fine, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). See also MPEP § 2143.03. Having failed to teach or suggest each and every limitation of the current application, the prior art referenced as rendering dependent claim 78 obvious, cannot serve as a basis for rejection.

Objections to Claim 79/Allowable Subject Matter

Claim 79 stands objected to as being dependent upon a rejected base claim, but is indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. Applicants note with appreciation the indication of allowability. However, Applicants respectfully submit that independent claim 27, from which claim 79 depends, is also allowable. Further, new claim 81 is claim 79 rewritten in independent form and should be in condition for allowance. New dependent claims 82-87 find support at least from dependent claims 73-79.

CONCLUSION

Claims 27 and 73-87 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,

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